SAFETY PRECAUTIONS

SERVICE WARNING

Only qualified service technicians who are familiar with safety checks and guidelines should perform service work. Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Do not attempt to modify any circuit unless so recommended by the manufacturer. When servicing the receiver, use an isolation transformer between the line cord and power receptacle.

SERVICING THE HIGH VOLTAGE AND CRT

Use EXTREME CAUTION when servicing the high voltage circuits. To discharge static high voltage, connect a 10K ohms resistor in series with a test lead between the receiver and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering X-ray radiation. In solid-state receivers and monitors, the CRT is the only potential source of X-rays. Keep an accurate high voltage meter available at all times. Check meter calibration periodically. Whenever servicing a receiver, check the high voltage at various brightness levels to be sure it is regulating properly. Keep high voltage at rated value, NO HIGHER. Excessive high voltage may cause X-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value. When troubleshooting a receiver with excessive high voltage, avoid close contact with the CRT. DO NOT operate the receiver longer than necessary. To locate the cause of excessive high voltage, use a variable AC transformer to regulate voltage. In present receivers, many electrical and mechanical components have safety related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

SAFETY CHECKS -- FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

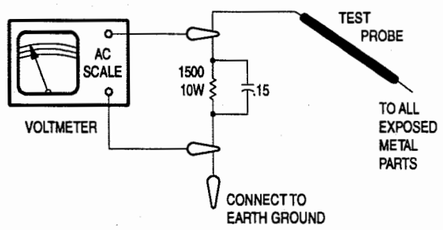
Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15µF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500µA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check inner board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.



The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

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PHOTOFACT® Technical Service Data

INDEX

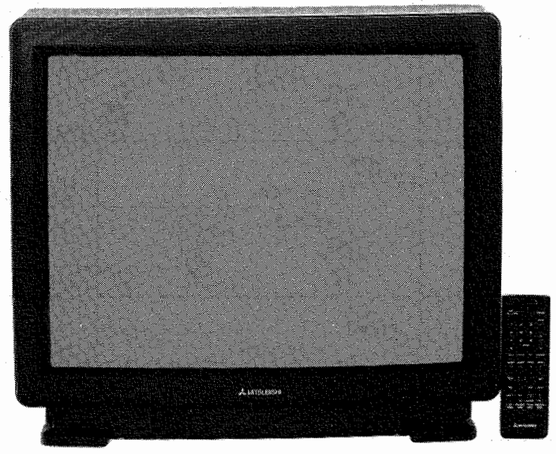
IC Functions 3, 4
Important Parts Information 4
Miscellaneous Adjustments 1
Parts List 4
PIP Adjustments 1
Placement Chart 1
Safety Precautions 1
Schematics
- Audio 3
- Audio & Comb Filter 3
- PIP 3
- Power Supply 2
- System Control 2
- Television 2
- Velocity Modulator 3

Schematic Notes 1
Stereo Adjustments 1
Test Equipment 1
Test Jig Hookup 1
Tuner Information 1

For Supplier Address,
See PHOTOFACT Annual Index

MITSUBISHI

Models CS-27201, CS-27303



Model CS-27303

Essential coverage for servicing a television receiver...

- **Schematics**
- **Component locations**
- **Parts list**

HOWARD W. SAMS & COMPANY

FEBRUARY 1995 SET 3443

3443

MISCELLANEOUS ADJUSTMENTS

PRETUNING

NOTE: All procedures require an antenna connected and power applied to the receiver.

Auto Memory

1. Press the menu button.
2. Press the adjust button to select *first time setup* then press the enter button.
3. Press the adjust button to select *memorize channels* then press the enter button.
4. Press the adjust button to select *cable* or *indoor/outdoor antenna.* Press the enter button. Available channels are scanned and stored into memory.

Initial Setting

The following selections must be completed before performing electrical adjustments.

1. Press the menu button on remote to display menu.
2. Press buttons 0, 0, and 8 in sequence to select *option menu.*
3. Press the adjust button to select *initial* then press the enter button.
4. Wait 5 seconds and apply a color bar signal set to channel 3.
5. Select *option menu.*
6. Using the adjust and enter buttons, set *hotel* to *off*, *sync* to *int*, and *call program* to *use.*
7. Press the menu button 2 times to return to normal viewing.

CAUTION: DO NOT select "E2 Reset" and then press the enter button. This will set all data to minimum and all adjustments must be performed.

CHARACTER POSITION

Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the video down button until "Sub HR" appears on the screen. Press the adjust button to center image on screen.

COMB FILTER

Tune in a color bar pattern. Connect an oscilloscope to the emitter of Q2054. Adjust VR2051 and T2051 for minimum chroma component.

HIGH VOLTAGE SHUTDOWN TEST

Connect a jumper across R521. The receiver should go into shutdown and remain in shutdown even after removing the jumper. To restore normal operation, remove power for 30 seconds.

HIGH VOLTAGE SHUTDOWN

NOTE: Care should be taken in defeating the high voltage shutdown circuit as this may cause excessive X-ray radiation and damage to the CRT or T551.
The high voltage is monitored by D582 rectifying pulses from T551 and applying the rectified voltage to D510. When D510 turns on the voltage at pin 24 of IC200 raises which shuts down the horizontal oscillator. To troubleshoot, remove R521 from the circuit and use a variable power supply for AC voltage. Start at 70.0VAC and troubleshoot to locate the defect. Reconnect R521.

RF AGC

Tune in a picture. Adjust VR100 counterclockwise until snow appears in picture. Then adjust VR100 clockwise until snow just disappears.

SUB COLOR

Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the video down button until "Sub Color" appears on the screen. Press the adjust button to set the level.

SUB CONTRAST

Tune in a crosshatch pattern. Set brightness and color to minimum and contrast to midrange. Adjust VR200 for a just visible pattern. Set brightness to maximum and check for blooming.

SUB TINT

Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the video down button until "Sub Tint" appears on the screen. Press the adjust button to set the level.

VERTICAL HEIGHT & LINEARITY

Tune in a crosshatch pattern. Adjust VR401 so the pattern fills 90% of the screen. Adjust VR402 for best linearity. Adjust VR401 for a slight overscan.

VIDEO LEVEL

Tune in a color bar pattern. Connect an oscilloscope to the emitter of Q103. Adjust VR101 for 1.0Vp-p.

CONVERGENCE / COLOR PURITY

CAUTION: Receiver employs a CRT with yoke assembly permanently bonded. Do not attempt to remove this assembly.

COLOR TEMPERATURE

Tune in a crosshatch pattern. Short TPX to ground to produce a service line. Adjust screen control until line is just visible. Note color of line and adjust remaining cutoff controls for a white line. Adjust screen, VR651, and VR652 controls for best white line at low and high brightness levels.

HORIZONTAL WIDTH, LINEARITY, & BALANCE

Supply a crosshatch signal and reset video function. Turn VR5A4 fully clockwise. Set VR5A3 so that the picture fills the screen. Set the screen control to a point where the picture becomes just visible. Adjust VR5A4 so that the picture fills the screen. Adjust VR5A2 so that the left and right lines are straight. Adjust VR5A1 for best pincushion phase. Readjust VR5A3 so that the picture just fills the screen.

STEREO ADJUSTMENTS

NOTE: The following adjustments were made with TV/Stereo generator connected to the antenna terminals.

COMPOSITE LEVEL

Select pilot, 1kHz audio frequency, and L+R modulating signal. Select stereo mode on receiver. Connect an oscilloscope to TP-M0. Adjust VR320 for 2.0Vp-p.

STEREO FILTER

Select SAP, 1kHz audio frequency, and L-R modulating signal. Select SAP mode on receiver. Connect an oscilloscope to TP-M5. Adjust VR351 for minimum.

STEREO VCO

Select pilot, 1kHz audio frequency, and L-R modulating signal. Select stereo mode on receiver. Connect a frequency counter to TP-M1. Place a 100K resistor between TP-L1 and TP-M4. Adjust VR355 for 15.75kHz, ±.05kHz. Remove resistor.

SEPARATION & SPECTRAL

Select pilot, 300Hz audio frequency, and L modulating signal. Select stereo mode on receiver. Connect an oscilloscope to TP-M2. Adjust VR353 for minimum amplitude of waveform. Select 8kHz audio frequency. Adjust VR354 for minimum amplitude of waveform. Repeat adjustments until no further decrease in waveform amplitude occurs.

TEST EQUIPMENT

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3100	Isolation Transformer	PR57
Generators		Capacitance Analyzer	LC101, LC102
RGB	CM2000	CRT Analyzer	CR70
Multiburst Signal	VG91	AC Leakage Tester	PR57
Color Bar	VG91	Inductance Analyzer	LC101, LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	TV Stereo Power Monitor	SR68, PA81
Frequency Meter	SC3100	Field Strength Meter	SL750
Hi-Voltage Probe	HP200	Transistor Tester	TF46
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

TEST JIG HOOKUP

Function	Chek-A-Color Adapter No.	PC Board Plug	Pin	Color
CRT	B239	DY	1	Red
Yoke	D482		2	Blue
Yoke Setting	YP1A		4	Yellow
Comments	Focus Tap		5	Brown

PIP ADJUSTMENTS

PIP READ CLOCK

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then press the source button until the PIP selects "Ext". Press the video down button until "PIP Trim" appears on the screen. Measure the frequency at TP-RC using the shield case for ground. Adjust LC7101 until the frequency measures 31.30MHz ±.05MHz. Press the menu button 2 times to exit the adjustment menu screen.

PIP WRITE CLOCK

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then press the source button until the PIP selects "Ext". Press the video down button until "PIP Trim" appears on the screen. Measure the frequency at TP-WC using the shield case for ground. Adjust LC7102 until the frequency measures 13.90MHz ± .05MHz. Press the menu button 2 times to exit the adjustment menu screen.

PIP SUB VIDEO

Place a color bar signal on the video input. Select "Ext" for both the main and PIP signals. Measure the waveform on connector VP pin 11. Adjust VR7001 on the PIP board until the amplitude of the PIP video component is within 2% of the main video component of the waveform.

PIP SUB CHROMA GAIN

Place a color bar signal on the video input. Select "Ext" for both the main and PIP signals. Measure the waveform on connector VP pin 9. Adjust VR7002 on the PIP board until the amplitude of the PIP chroma component is within 5% of the main chroma component of the waveform.

PIP SUB TINT

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video down button until "PIP Tint" appears on the screen. Press the adjust up/down button until the hue of the PIP window matches the hue of the main screen. Press the menu button 2 times to exit the adjustment menu screen.

PIP Y DELAY READ

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video up button until "PIP Y Delay Read" appears on the screen. Press the adjust up/down button and hold it until the "05" mark appears. Press the menu button 2 times to exit the adjustment menu screen.

PIP Y DELAY WRITE

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video up button until "PIP Y Delay Write" appears on the screen. Press the adjust up/down button and hold it until the "05" mark appears. Press the menu button 2 times to exit the adjustment screen.

PIP TIMING

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video up button until "PIP Timing" appears on the screen. Press the adjust up/down button and hold it until the "0A" mark appears. Press the menu button 2 times to exit the adjustment screen.

PIP C OUT

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video up button until "PIP C Out" appears on the screen. Press the adjust up/down button to match the main screen color level. Press the menu button 2 times to exit the adjustment screen.

PIP Y OUT

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video up button until "PIP Y Out" appears on the screen. Press the adjust up/down button to match the main screen intensity. Press the menu button 2 times to exit the adjustment screen.

PIP HORIZONTAL POSITION

Place a color bar signal on the video input. Press the menu button on the remote. Press buttons 0, 0, and 7 in sequence. Press the PIP button on the remote then select "Ext" for both the main and PIP signals. Press the video up button until "PIP HOR" appears on the screen. Press the adjust up/down button to select the desired horizontal position. Press the menu button 2 times to exit the adjustment screen.

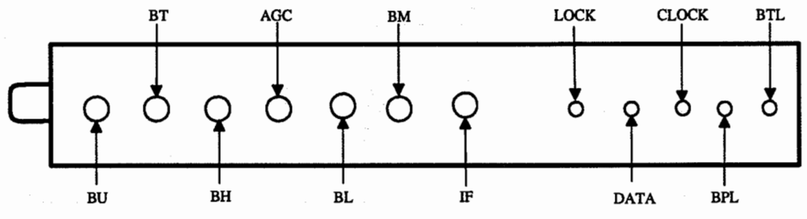
TUNER INFORMATION

TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band	Pin	VHF Low Band	VHF High Band	UHF Band
BTL	31.6V	31.6V	31.6V	AGC	4.4V	4.5V	4.5V
BPL	4.9V	4.9V	4.9V	BH	0V	11.9V	0V
CLOCK	.39V	.39V	.39V	BT	1.3V	4.5V	4.7V
DATA	3.7V	3.7V	3.7V	BU	.1V	.1V	11.9V
LOCK	.25V	.25V	.25V				
IF	0V	0V	0V				
BM	12.0V	12.0V	12.0V				
BL	11.9V	.3V	0V				

NOTE: VHF Low Band voltages taken on channel 2.
VHF High Band voltages taken on channel 7.
UHF Band voltages taken on channel 14.

TUNER TERMINAL GUIDE



SCHEMATIC NOTES

 # For SAFETY use only equivalent replacement part, see parts list.

→← Circuitry not used in some versions.

--- Circuitry used in some versions.

⏚ Ground

⏚ Chassis ground

▽ Common tie point

△ Taken from common tie point

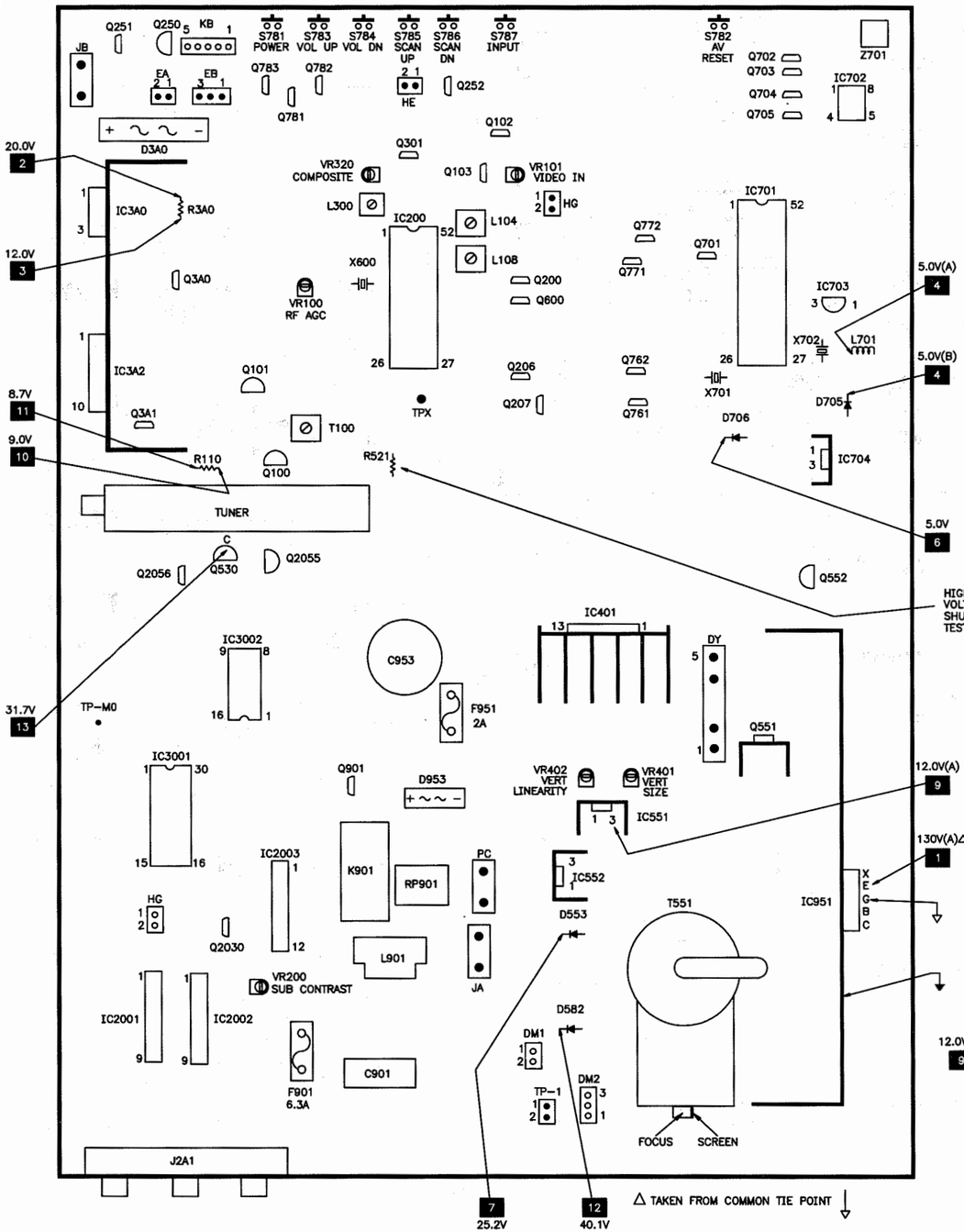
3 Schematic CIRCUITRACE ®: Voltage source tie point.

A Cabling: Heavy lines reduce use of multiple lines.

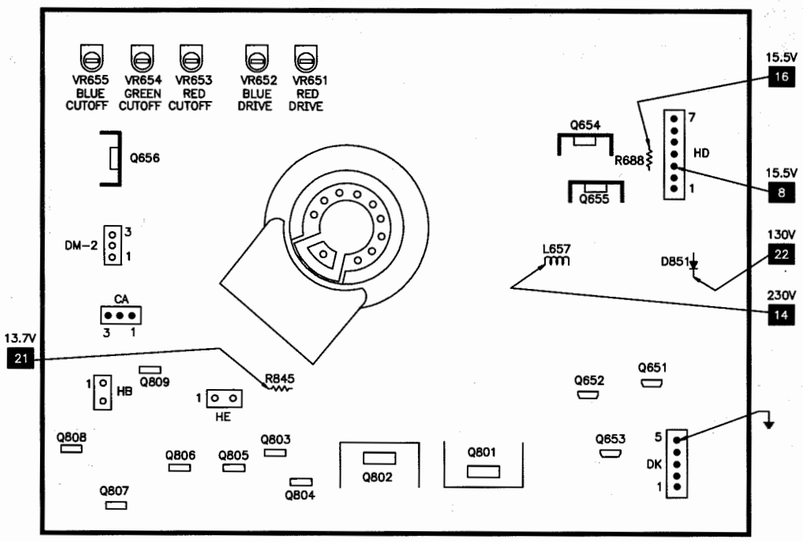
Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms taken with triggered scope and colorbar signal. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.
Supply voltages maintained as seen at input.
Voltages measured with digital meter and a 1000µV RF signal, with colorbar pattern, applied to antenna terminal.
Controls adjusted for normal operation.
Capacitors are 50 volts or less, 5% or greater unless noted.
Electrolytic capacitors are 50 volts or less, 20% or greater unless noted.
Resistors are 1/2W or less, 5% or greater unless noted.
Value in ( ) used in some versions.
Measurements with switching as shown, unless noted.
Rated voltage shown on zener diodes.

PLACEMENT CHART

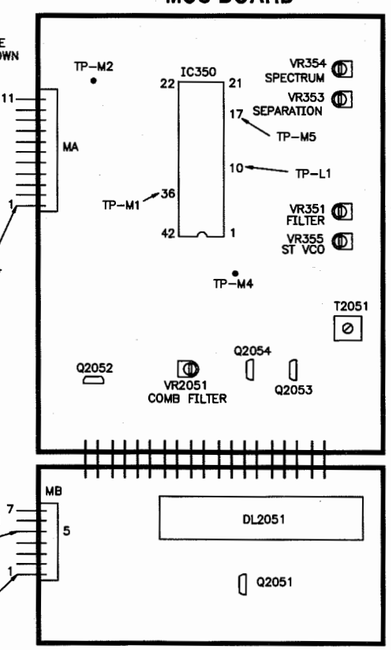
MAIN BOARD



CRT BOARD

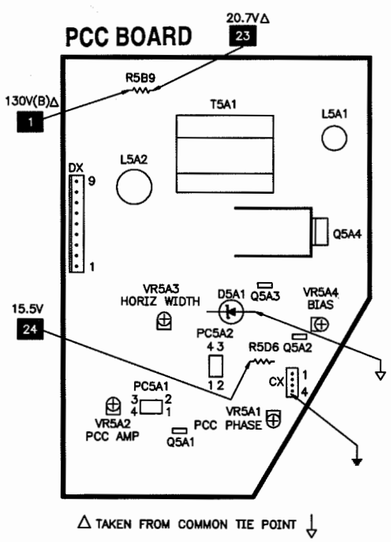


MCS BOARD



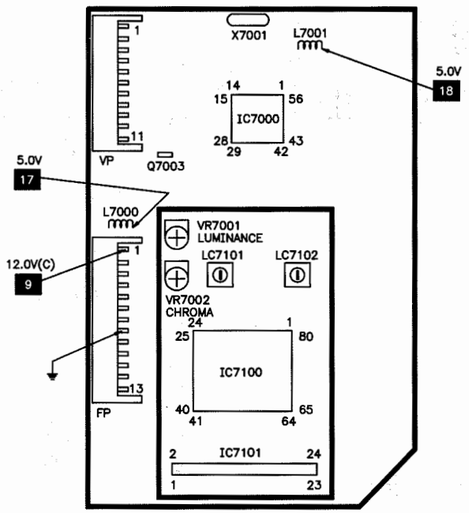
COMB FILTER BOARD

PCC BOARD

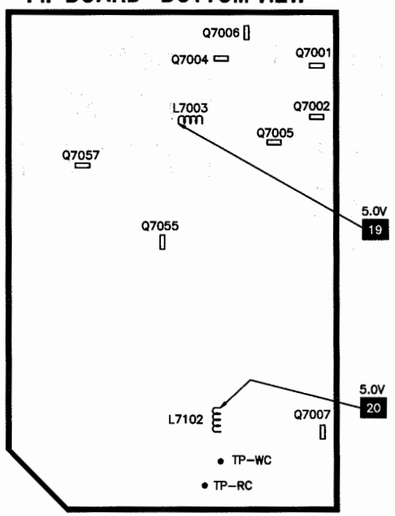


△ TAKEN FROM COMMON TIE POINT

PIP BOARD - TOP VIEW



PIP BOARD - BOTTOM VIEW



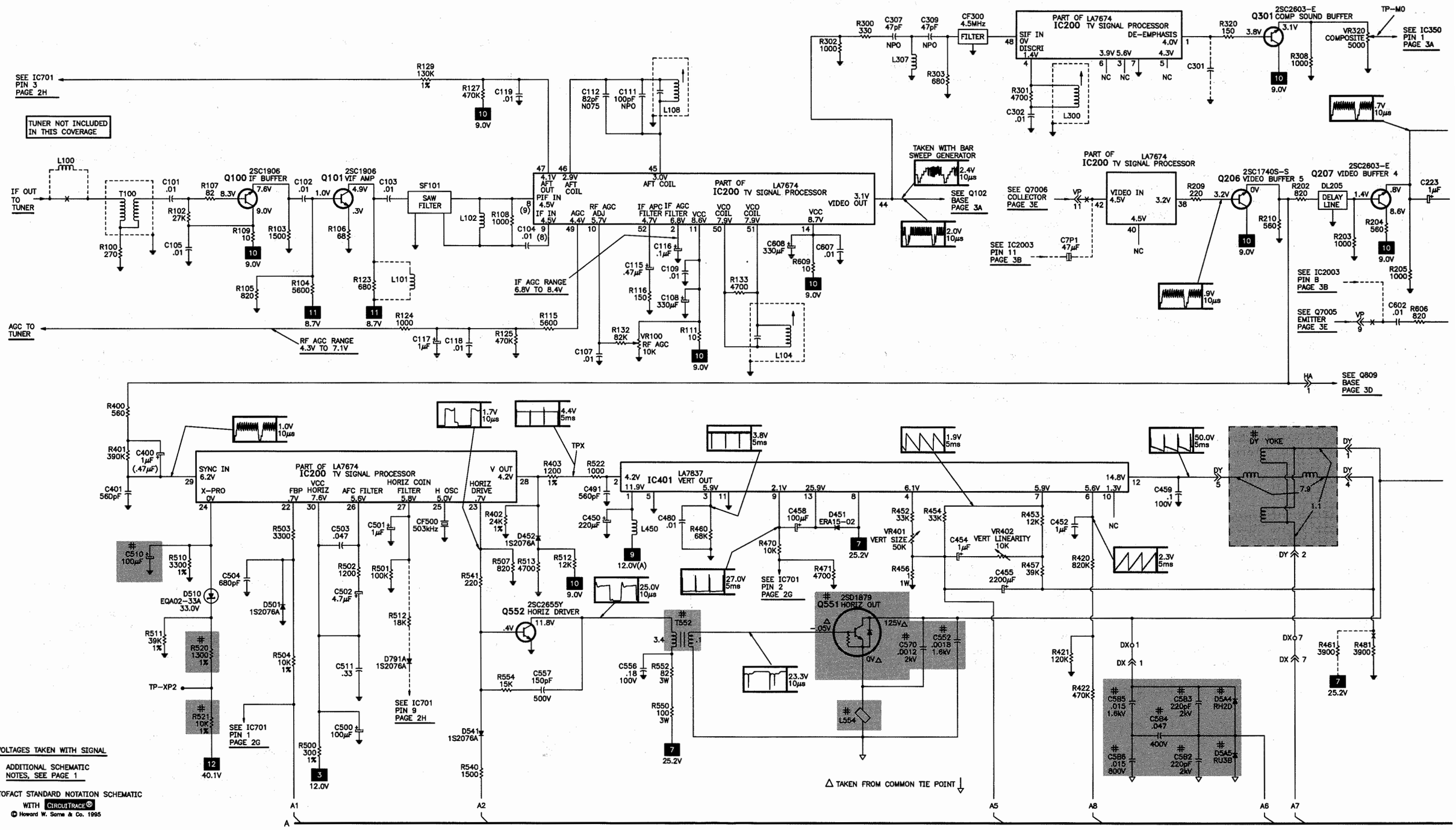
MITSUBISHI

MODELS CS-27201, CS-27303

A

B

TELEVISION SCHEMATIC


SEE IC701 PIN 3 PAGE 2H
TUNER NOT INCLUDED IN THIS COVERAGE
IF OUT TO TUNER
AGC TO TUNER
RF AGC RANGE 4.3V TO 7.1V
IF AGC RANGE 6.8V TO 8.4V
SAW FILTER
Q100 2SC1906 IF BUFFER
Q101 2SC1906 VIF AMP
PART OF LA7674 IC200 TV SIGNAL PROCESSOR
VIDEO OUT
TAKEN WITH BAR SWEEP GENERATOR
SEE Q102 BASE PAGE 3A
SEE Q7006 COLLECTOR PAGE 3E
SEE IC2003 PIN 11 PAGE 3B
PART OF LA7674 IC200 TV SIGNAL PROCESSOR
Q206 2SC1740S-S VIDEO BUFFER 5
Q207 2SC2603-E VIDEO BUFFER 4
DELAY LINE
SEE IC2003 PIN B PAGE 3B
SEE Q7005 EMITTER PAGE 3E
Q301 2SC2603-E COMP SOUND BUFFER
SEE IC350 PIN 1 PAGE 3A
CF300 4.5MHz FILTER
PART OF LA7674 IC200 TV SIGNAL PROCESSOR DE-EMPHASIS
SIF IN 0V DISCRI 1.4V
SEE Q809 BASE PAGE 3D
SEE IC701 PIN 1 PAGE 2G
SEE IC701 PIN 9 PAGE 2H
SEE IC701 PIN 2 PAGE 2G
IC401 LA7837 VERT OUT
Q552 2SC2655Y HORIZ DRIVER
Q551 2SD1879 HORIZ OUT
DY YOKE
VR401 VERT SIZE 50K
VR402 VERT LINEARITY 10K
TP-XP2
TP-MO
TPX
HA
VOLTAGES TAKEN WITH SIGNAL
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1
△ TAKEN FROM COMMON TIE POINT
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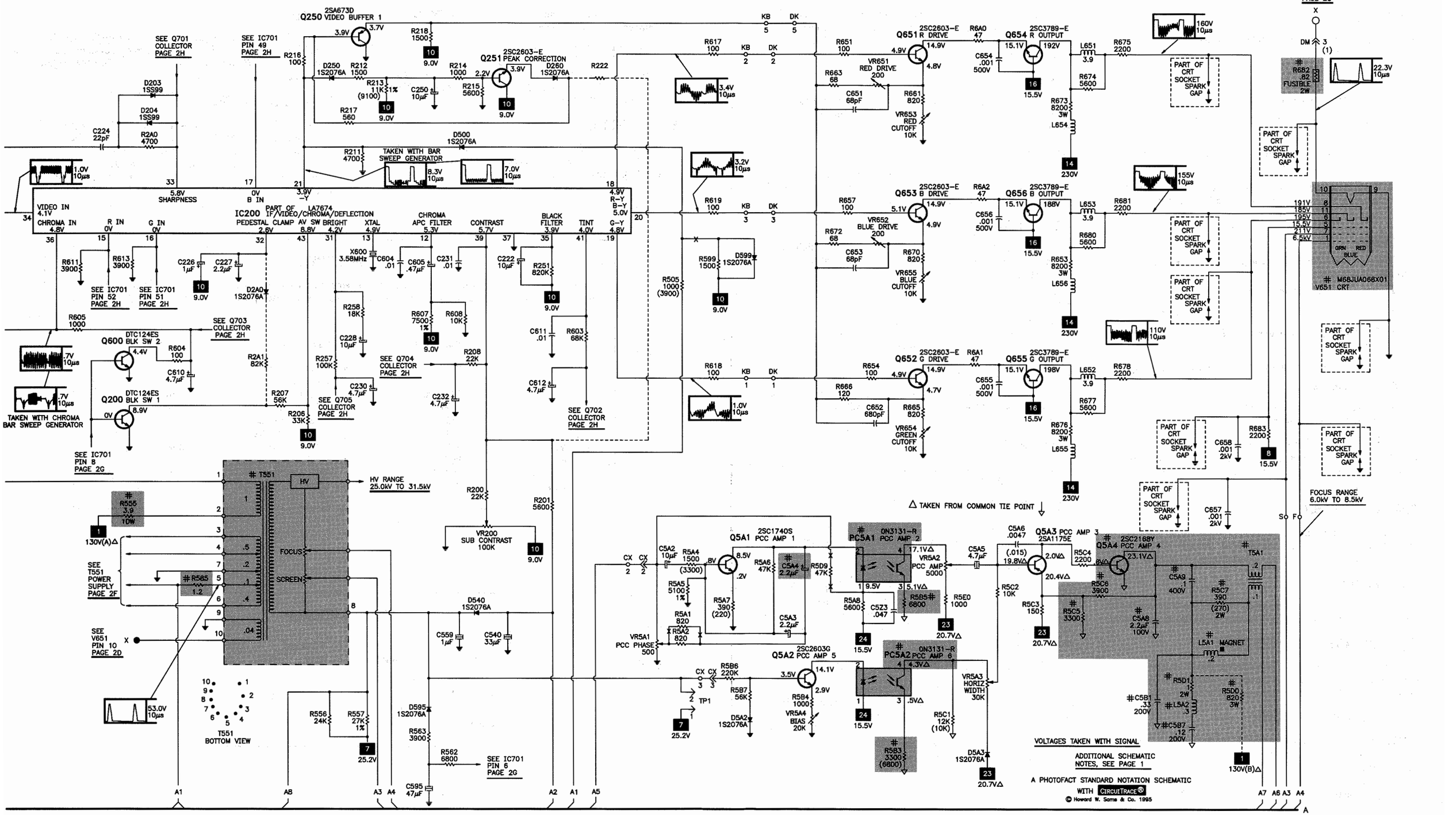
TELEVISION SCHEMATIC continued


Q250 2SA673D VIDEO BUFFER 1
Q251 2SC2603-E PEAK CORRECTION
IC200 PART OF LA7674 IF/VIDEO/CHROMA/DEFLECTION
Q600 DTC124ES BLK SW 2
Q200 DTC124ES BLK SW 1
Q651 2SC2603-E R DRIVE
Q654 2SC3789-E R OUTPUT
Q653 2SC2603-E B DRIVE
Q656 2SC3789-E B OUTPUT
Q652 2SC2603-E G DRIVE
Q655 2SC3789-E G OUTPUT
Q5A1 2SC1740S PCC AMP 1
PC5A1 0N3131-R PCC AMP 2
Q5A3 PCC AMP 3 2SA1175E
Q5A4 2SC2168Y PCC AMP 4
Q5A2 2SC2603G PCC AMP 5
PC5A2 0N3131-R PCC AMP 6
T551
VIDEO IN 4.1V
CHROMA IN 4.8V
R IN 0V
G IN 0V
B IN 0V
PEDESTAL CLAMP
AV SW BRIGHT
XTAL
CHROMA APC FILTER
CONTRAST
BLACK FILTER
TINT
R-Y B-Y G-Y
SEE Q701 COLLECTOR PAGE 2H
SEE IC701 PIN 49 PAGE 2H
SEE IC701 PIN 52 PAGE 2H
SEE IC701 PIN 51 PAGE 2H
SEE Q703 COLLECTOR PAGE 2H
SEE Q704 COLLECTOR PAGE 2H
SEE Q705 COLLECTOR PAGE 2H
SEE Q702 COLLECTOR PAGE 2H
SEE IC701 PIN 8 PAGE 2G
SEE IC701 PIN 6 PAGE 2G
TAKEN WITH CHROMA BAR SWEEP GENERATOR
TAKEN WITH BAR SWEEP GENERATOR
HV RANGE 25.0kV TO 31.5kV
SEE T551 POWER SUPPLY PAGE 2F
SEE V651 PIN 10 PAGE 2D
SEE T551 PIN 10 PAGE 2C
FOCUS RANGE 6.0kV TO 8.5kV
VR200 SUB CONTRAST 100K
VR651 RED DRIVE 200
VR652 BLUE DRIVE 200
VR653 RED CUTOFF 10K
VR654 GREEN CUTOFF 10K
VR655 BLUE CUTOFF 10K
VR5A1 PCC PHASE 500
VR5A2 PCC AMP 5000
VR5A3 HORIZ WIDTH 30K
VR5A4 BIAS 20K
TP1
L5A1 MAGNET
V651 CRT
PART OF CRT SOCKET SPARK GAP
TAKEN FROM COMMON TIE POINT
VOLTAGES TAKEN WITH SIGNAL
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1
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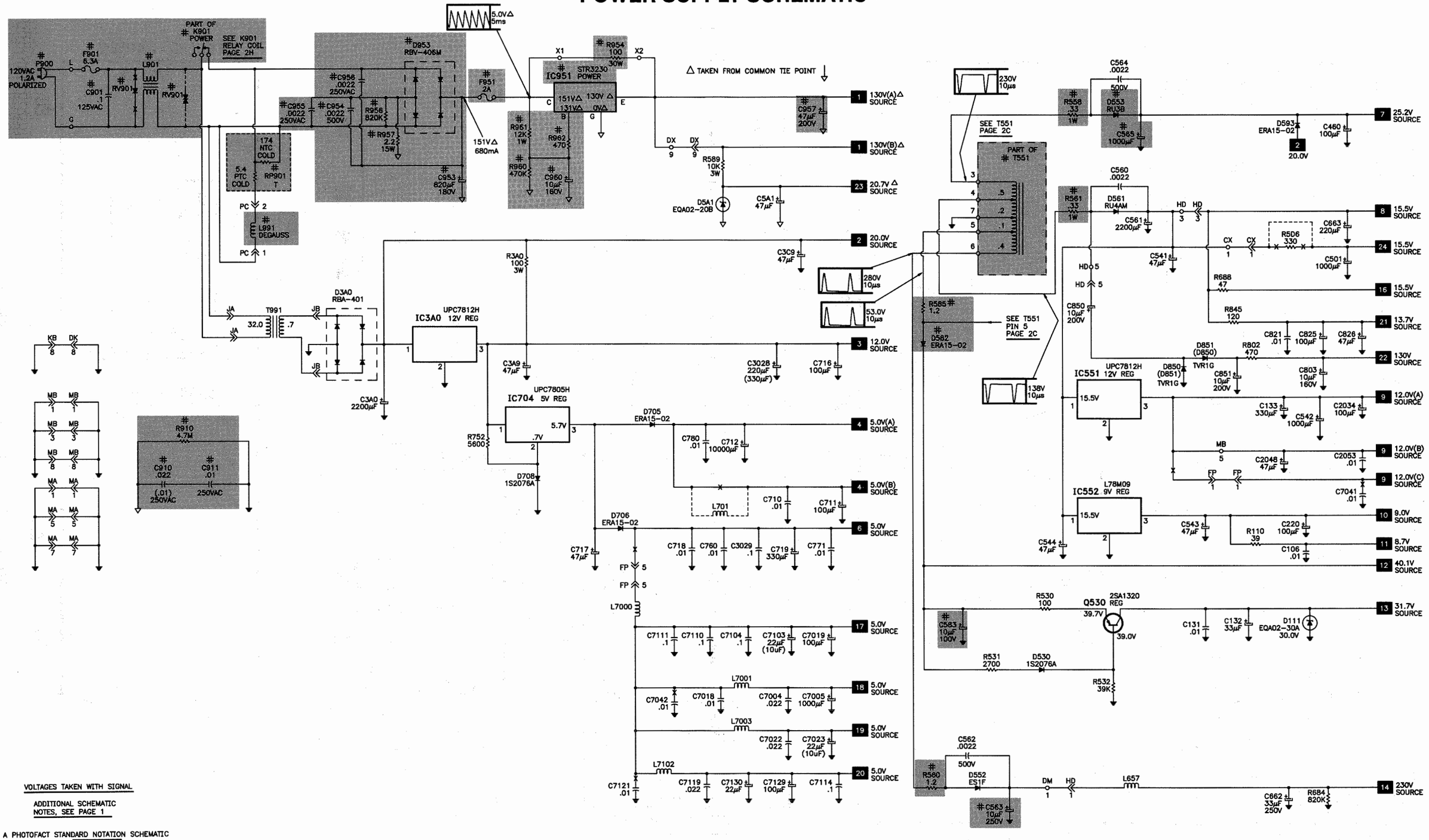
POWER SUPPLY SCHEMATIC



VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

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E

F

SYSTEM CONTROL SCHEMATIC

TUNER NOT INCLUDED IN THIS COVERAGE

Z701 REMOTE RECEIVER

S782 AV RESET · S781 POWER · S784 VOL DN · S783 VOL UP · S786 SCAN DN · S785 SCAN UP · S787 INPUT

D785 1S2076A · D784 1S2076A · D787 1S2076A · D786 1S2076A · D789 1S2076A · D788 1S2076A · D790 1S2076A

D7A6 EQA02-06E 6.0V

R716 330 · R717 2200 · C781 330pF · R718 560 · R719 10K · D7A7 EQA02-06E 6.0V

Q783 2SC2603-E ST DISPLAY · R783 33K · D783 2SC2603-E 1S2076A

Q782 SAP DISPLAY · R782 33K · D782 1S2076A · R720 560 · R721 10K · D7A8 EQA02-06E 6.0V

Q781 Y/C DISPLAY · R781 33K · D781 1S2076A · D7P1 1S2076A · R722 560 · R723 10K · D7A9 EQA02-06E 6.0V

R705 560 · R706 10K · D7A5 EQA02-06E 6.0V

SEE IC350 PIN 23 PAGE 3A · SEE IC350 PIN 22 PAGE 3A · SEE IC2001 PIN 3 PAGE 3A · MA · R786 10K · R787 10K

SEE IC401 PIN 9 PAGE 2A

SEE T551 PIN 8 PAGE 2C

C701 100pF · D702 1S2076A · D7A2 HZ5BLL · R703 27K (270K) · C703 .01 · R704 39K · D707 1S2076A · D703 EQA02-07A 6.8V

R780 680 · C704 220µF · R707 39K · D7B3 EQA02-06E 6.0V

Q761 2SA933SR VIDEO BUFFER 7 · Q762 2SC1740S VIDEO BUFFER 6 · Q763 2SA933S-S 1MHz LPF · C763 220pF · C706 .1

SEE IC2003 PIN 11 PAGE 3B · C761 10µF · R762 10K · R764 680 · R766 1000 · R767 1000 · C762 100pF · R768 1000 · R765 390 · C707 .1 · R7A0 470 · R724 1M · D7B5 EQA02-06E 6.2V · C780 560pF · R761 4700 · R763 330

IC702 CAT24C02P EPROM · R733 100 · R735 4700 · R734 100 · R799 4700

R771 150 · C772 1µF · R772 120K · Q771 2SC2603-E SD DET 2 · Q772 2SA933S-S SD DET 1 · R775 10K · R773 5600 · D771 1S2076A · R774 15K · C773 180pF · R776 8.2 · R777 22K · C774 10µF · D772 1S2076A · R778 22K · R701 27K · R714 10K · D704 1S2076A · D7A0 EQA02-07A 6.8V · D701 HZ5ALL

SEE IC200 PIN 22 PAGE 2A

M37263MB-561SP IC701 CPU

TV CLK .3V 44 · LOAD 0V 13 · XOUT2 3.9V 42 · TV LOCK .3V 41 · V HOLD 1.1V 19 · XOUT1 4.4V 43 · SPKR 4.9V 7 · BLK2 0V 8 · MAIN 5.0V 9 · TINT 1.0V 45 · SUB 5.0V 10 · COLOR 1.4V 46 · MAIN S/C 5.0V 31 · CONTRAST .7V 47 · CCO ON 0V 32 · BRIGHT 1.4V 48 · VCC 27 · SHARP 1.4V 11 · RESET 5.0V 30 · OUT 0V 49 · B 0V 50 · G 0V 51 · R 0V 52 · POWER 4.9V 33 · X IN 2.3V 24 · OSC 2 2.5V 28 · OSC 1 2.4V 29 · X OUT 2.2V 25 · AFT 2.3V 3 · SUB SD 0V 35 · GRAY BACK 0V 36 · SUB S/C 4.9V 37 · PIP SID 4.6V 38

R739 1000 · R715 100 · C1B1 56pF · CLOCK TO TUNER · DATA TO TUNER · R3048 330 · FB · SEE IC7100 PIN 35 PAGE 3F · R737 330 · C1B2 56pF · 07A4 EQA02-06E 6.0V · R736 1000 · LOCK TO TUNER · D7B8 EQA02-06E 6.0V · D7B4 EQA02-06E 6.0V · C705 .001 · R738 100 · 07A3 EQA02-06E 6.0V · R3047 300 · FP 11 · SEE IC7100 PIN 36 PAGE 3F

R708 1000 · SEE Q3A0 BASE PAGE 3C · R709 1000 · SEE Q600 BASE PAGE 2C · SEE Q2056 BASE PAGE 3A · R710 10K · SEE IC2001 PIN 2 PAGE 3A · SEE IC200 PIN 27 PAGE 2A · R711 10K · SEE IC2002 PIN 2 PAGE 3A · R727 1000 · SEE IC2003 PIN 2 PAGE 3B

SEE IC350 PIN 24 PAGE 3B · SEE IC350 PIN 26 PAGE 3B · MA

UPD6326C IC3002 O/A

5.4V 12 · .1V 13 · 5.5V 14 · 0V 15 · 5.5V 11 · .2V 10 · 0V 4 · NC 5 · 0V 2 · 3.7V 11.5V 7 · 11.5V 9 · 4.4V 3 · .3V NC 6 · 8 · 1 · 16 · 6 5.0V · 3 12.0V

SEE IC3001 PIN 2 PAGE 3C · SEE IC3001 PIN 12 PAGE 3C · SEE IC3001 PIN 14 PAGE 3C · SEE IC3001 PIN 8 PAGE 3C · SEE IC3001 PIN 16 PAGE 3C · SEE IC3001 PIN 30 PAGE 3C · R3031 22K · R3032 10K 10K 10K 10K 10K 10K

Q702 DTC124ES FUNCTION BUFFER 2 · R740 8200 1% · R741 47K 1% · D7A1 EQA02-07A 6.8V · SEE IC200 PIN 41 PAGE 2C

Q703 DTC124ES FUNCTION BUFFER 3 · R742 8200 1% · R743 20K 1% · SEE IC200 PIN 36 PAGE 2G

Q704 DTC124ES FUNCTION BUFFER 4 · R744 24K 1% · R797 33K 1% · R745 91K 1% · SEE IC200 PIN 39 PAGE 2C

Q705 DTC124ES FUNCTION BUFFER 5 · R746 10K 1% · D792 1S2076A · D799 1S2076A · D791 EQA02-08C 6.2V · SEE IC200 PIN 31 PAGE 2C

Q701 DTC124ES FUNCTION BUFFER 1 · R712 10K 1% · D206 1SS99 · L251 · R253 820 · D205 1SS99 · R713 13K 1% · C229 33µF · C225 .01 · SEE IC200 PIN 33 PAGE 2C

IC703 PST520E RESET · R725 100 · R726 1000 · C715 47µF · 5.0V(A)

SEE K901 SWITCH PAGE 2E · PART OF K901 # POWER

Q901 2SC1740S-E RELAY DRIVE · R901 22K · D901 ERA15-02 · C140 33µF · C130 .01 · R140 150 · D110 EQA02-05C 5.1V

Q252 2SK656 AMP · C290 10µF · HE · SEE Q803 BASE PAGE 3D · R220 270K

C708 18pF (33pF) · C713 · C714 18pF 18pF (33pF) · X702 12MHz · X701 8MHz · C709 18pF (33pF)

R729 330 · R730 330 · R731 330 · R732 220 · R2046 330 · FP · SEE IC7000 PIN 43 PAGE 3E · SEE IC7000 PIN 40 PAGE 3E · SEE Q7007 BASE PAGE 3E · SEE IC7100 PIN 37 PAGE 3F

D7B7 RD6.2FB3 · D7B0 RD6.2FB3 · D7B1 RD6.2FB3 · D7B6 RD6.2FB3

D7C2 RD6.2FB3 · D7C1 RD6.2FB3 · D7C0 RD6.2FB3 · D7B9 RD6.2FB3

R748 1000 · R616 5600 · D201 1S2076A · SEE IC200 PIN 17 PAGE 2C · R749 1200 · D200 1S2076A · R612 3300 · SEE IC200 PIN 16 PAGE 2C · R750 1500 · SEE IC200 PIN 15 PAGE 2C · R751 1500 · R728 1000

D7D2 HZ5BLL · D7D1 HZ5BLL · D7D0 HZ5BLL · D7B2 EQA02-06E 6.2V · R702 150K · C702 .1

BM TO TUNER · BPL TO TUNER · BH TO TUNER · BTL TO TUNER · BL TO TUNER · BT TO TUNER · BU TO TUNER · NC

VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE

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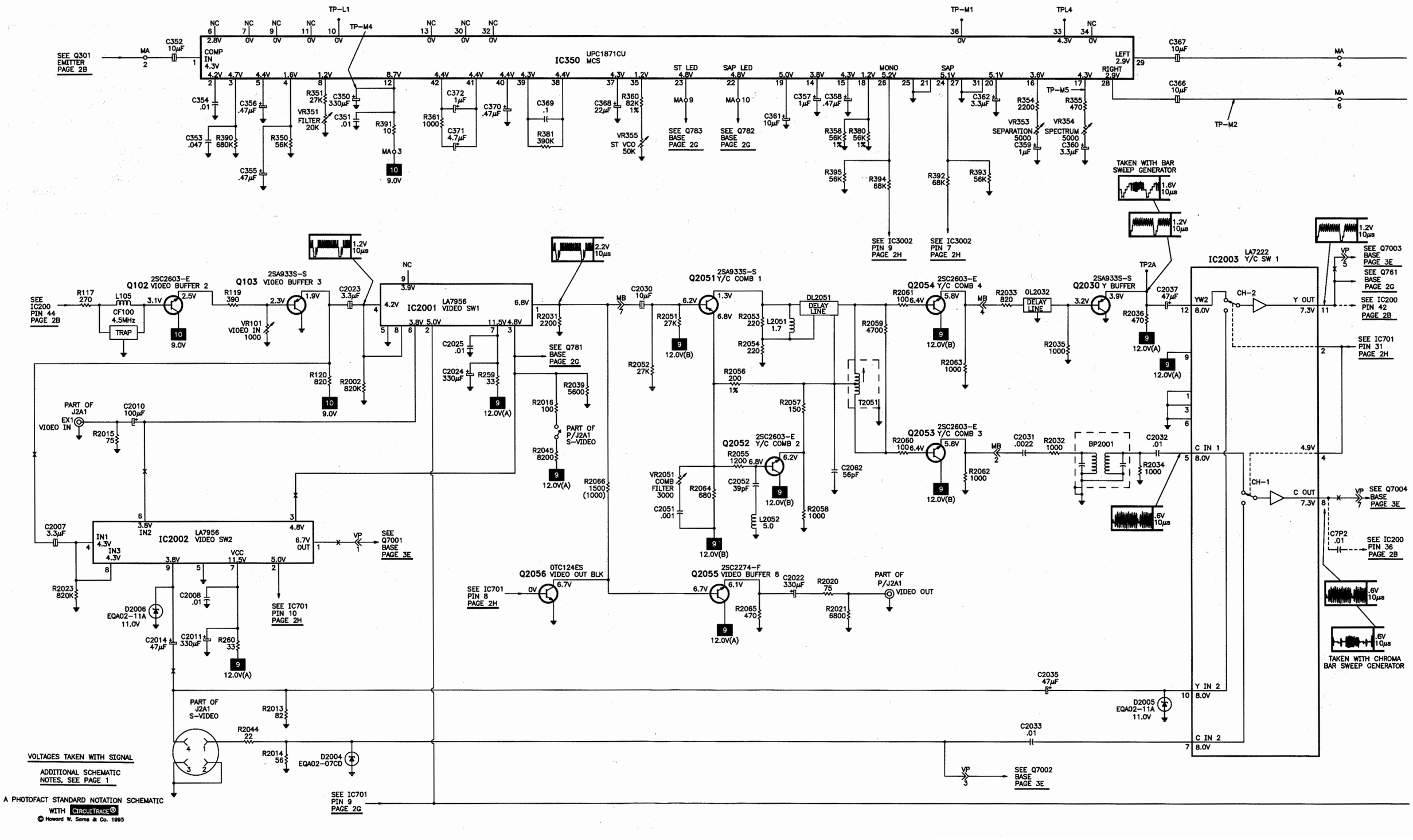
MITSUBISHI MODELS CS-27201, CS-27303

G H

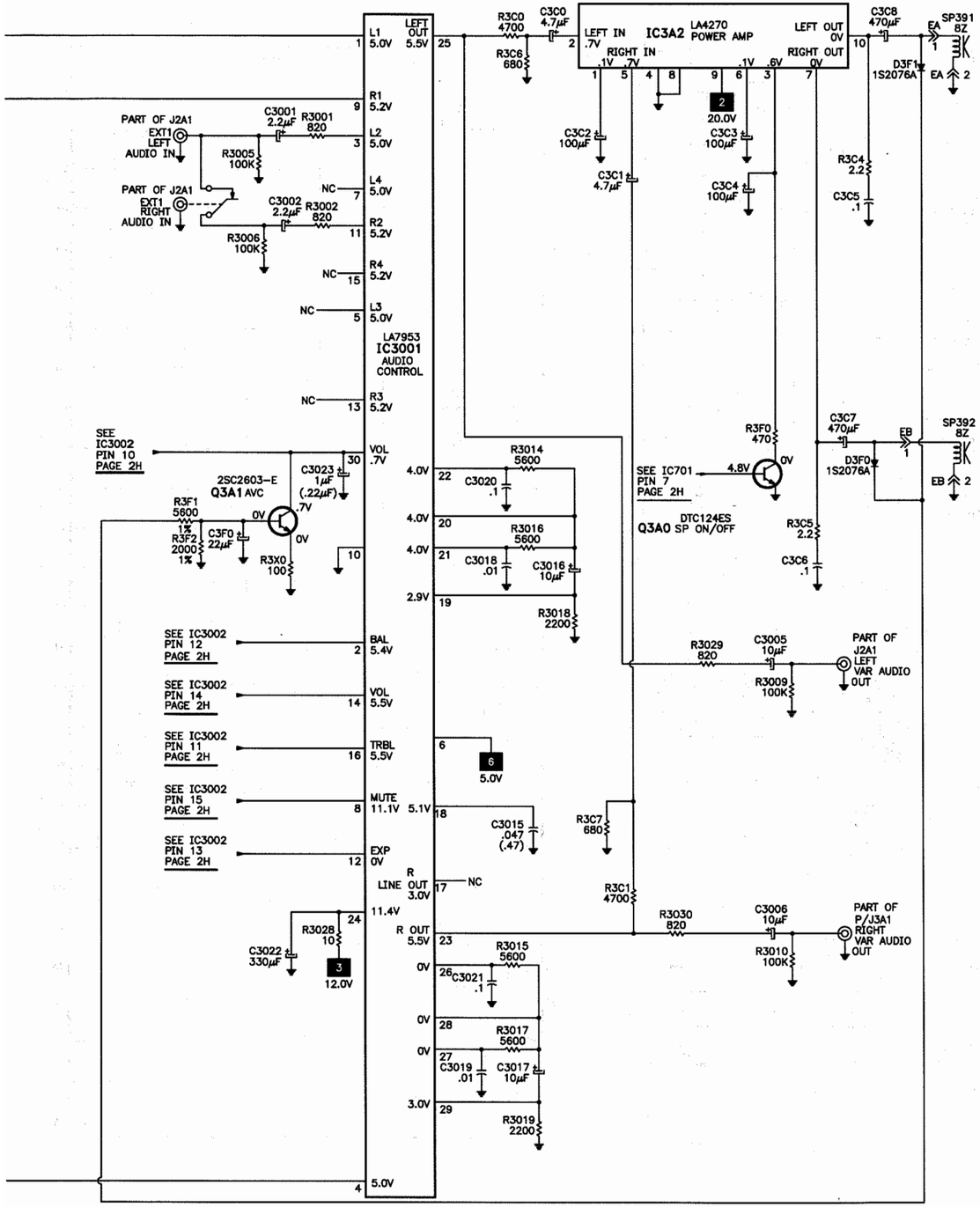
A

B

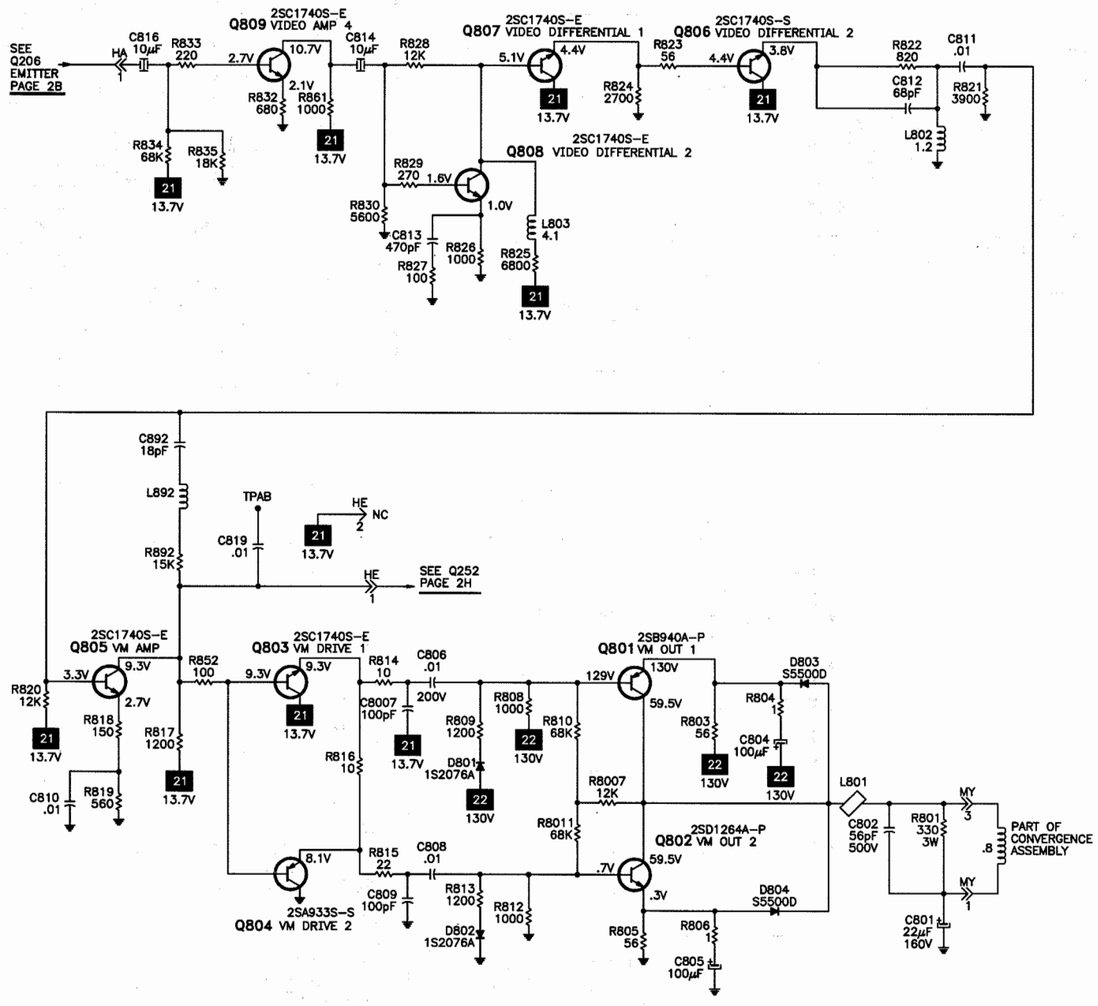
AUDIO & COMB FILTER SCHEMATIC


IC350 UPC1871CU MCS
IC2001 LA7956 VIDEO SW1
IC2002 LA7956 VIDEO SW2
IC2003 LA7222 Y/C SW 1
Q102 2SC2603-E VIDEO BUFFER 2
Q103 2SA933S-S VIDEO BUFFER 3
Q2051 2SA933S-S Y/C COMB 1
Q2052 2SC2603-E Y/C COMB 2
Q2053 2SC2603-E Y/C COMB 3
Q2054 2SC2603-E Y/C COMB 4
Q2030 2SA933S-S Y BUFFER
Q2055 2SC2274-F VIDEO BUFFER 8
Q2056 0TC124ES VIDEO OUT BLK
TAKEN WITH BAR SWEEP GENERATOR
TAKEN WITH CHROMA BAR SWEEP GENERATOR
VOLTAGES TAKEN WITH SIGNAL
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®
© Howard W. Sams & Co. 1995

C
AUDIO SCHEMATIC



D
VELOCITY MODULATOR SCHEMATIC



VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

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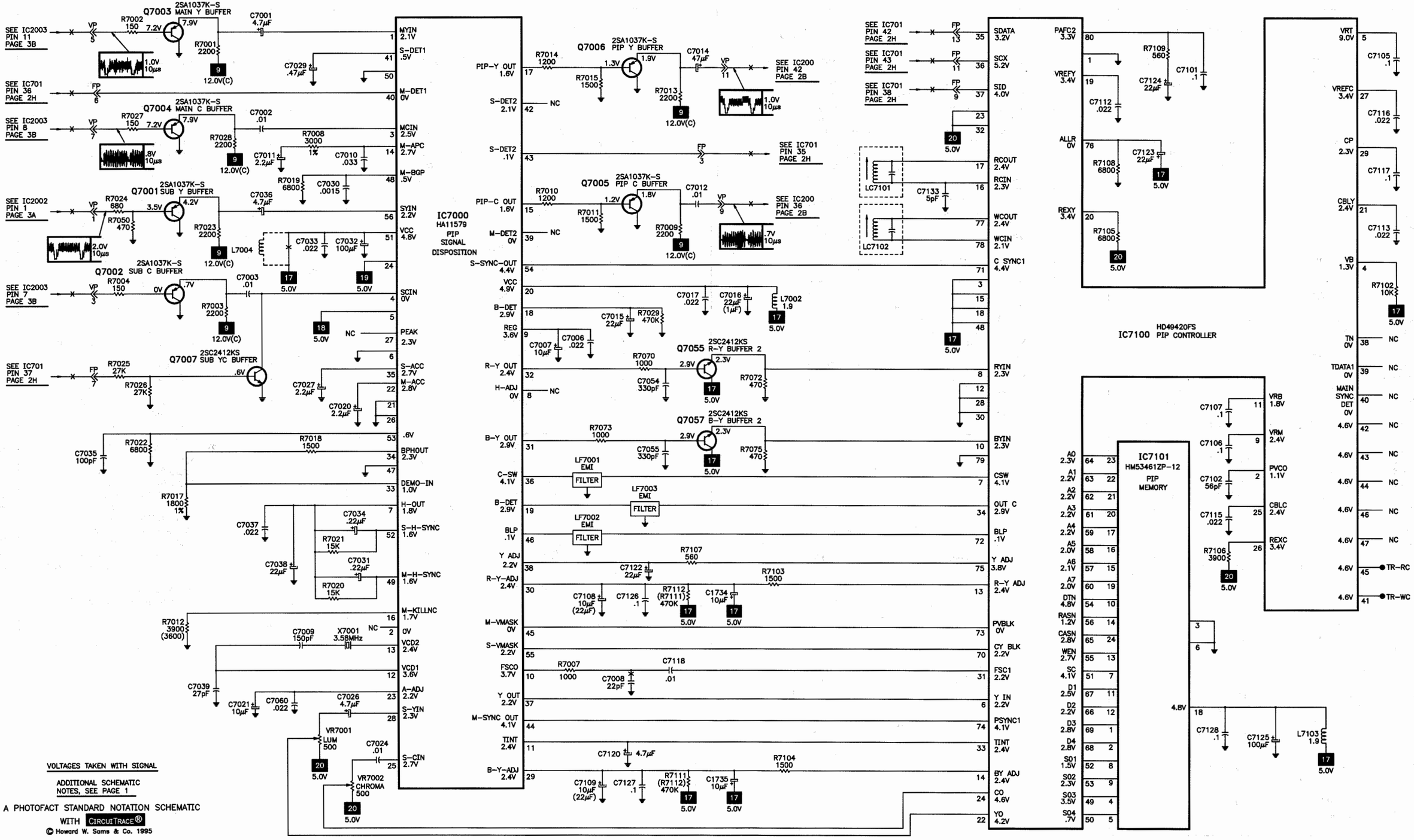
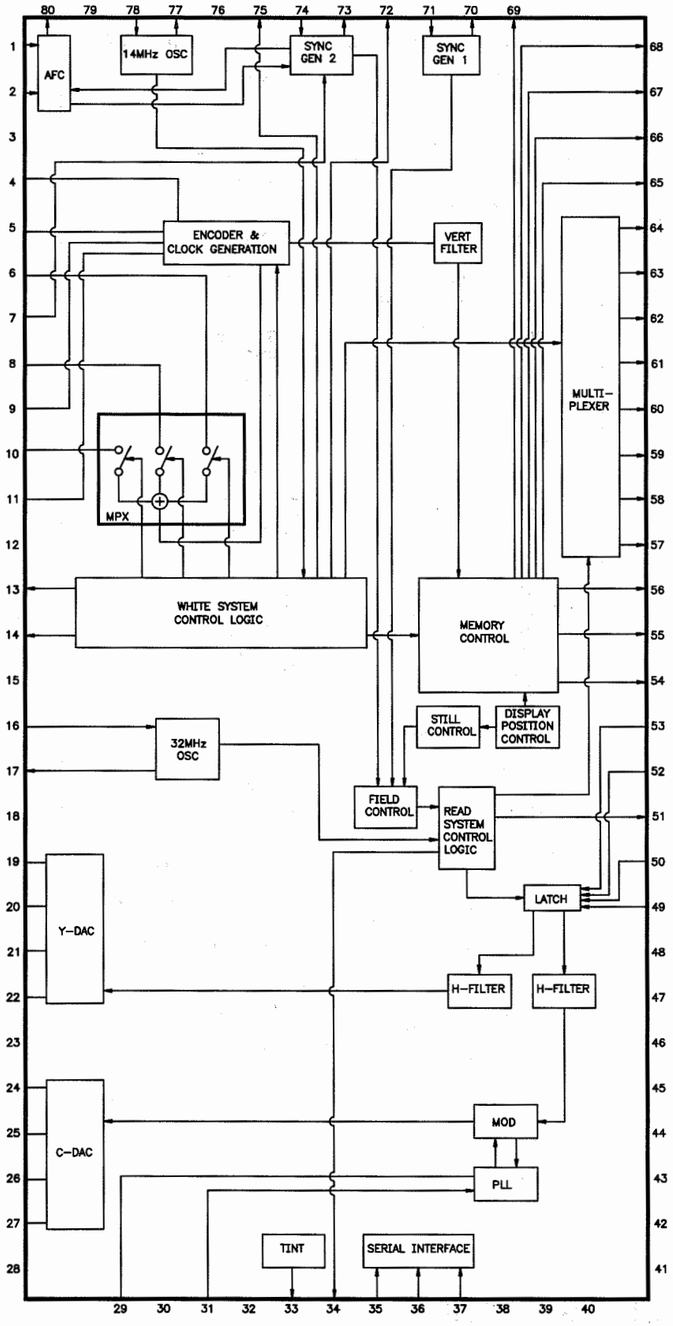
PIP SCHEMATIC

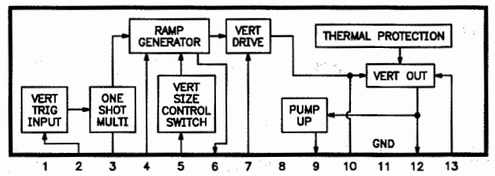


IC FUNCTIONS

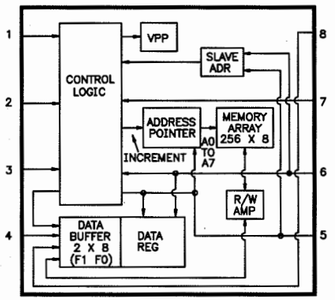
IC7100
HD49420FS



IC401
LA7837



IC702
CAT24C02P



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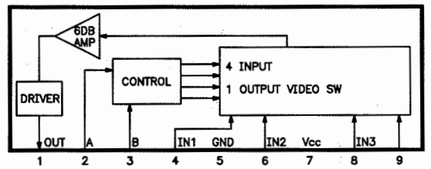
LA7956



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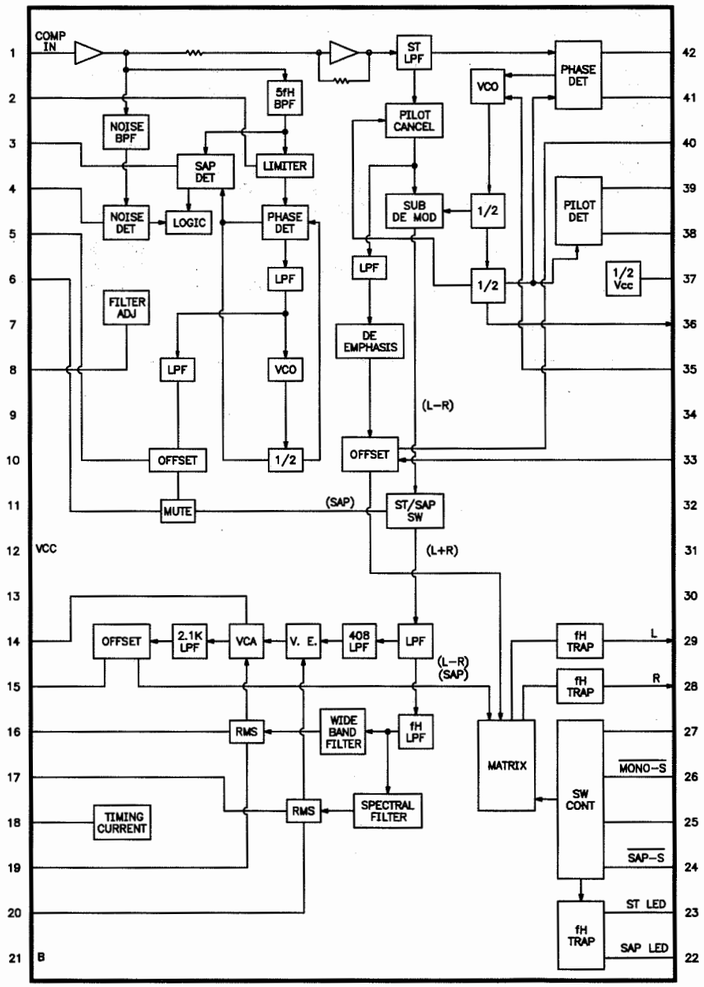
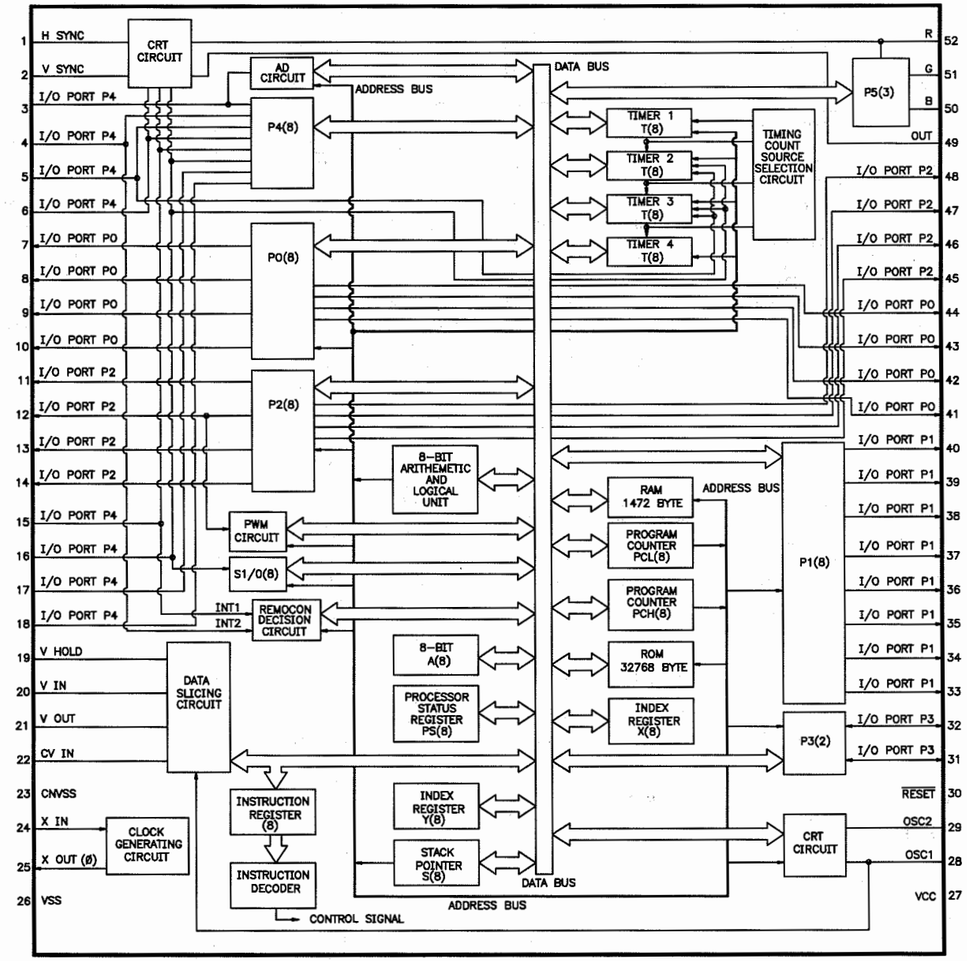
UPC1871CU



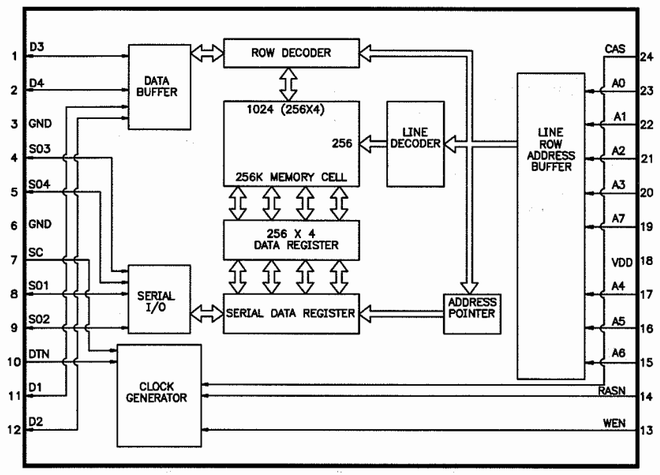
IC701
M37263MB-561SP



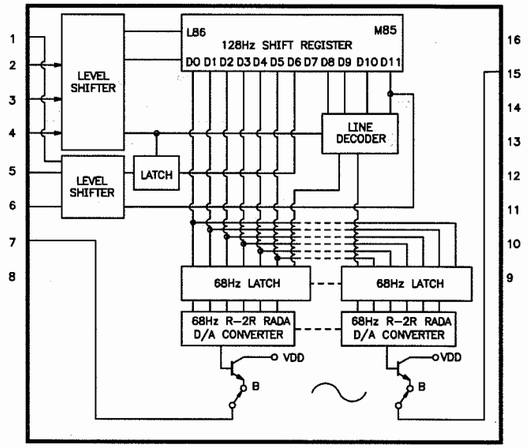
MITSUBISHI
MODELS CS-27201, CS-27303

IC FUNCTIONS continued

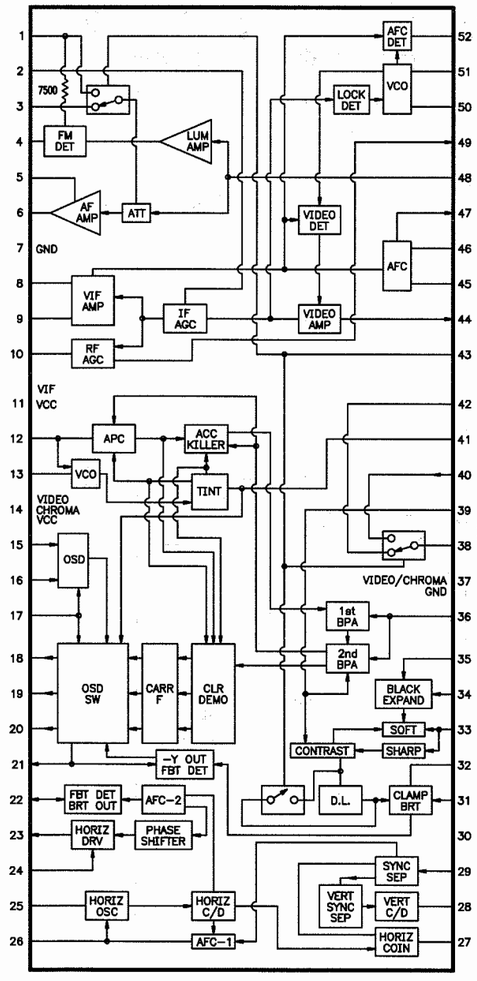
IC7101
HM53461ZP-12



IC3002
UPD6326C



IC200
LA7674



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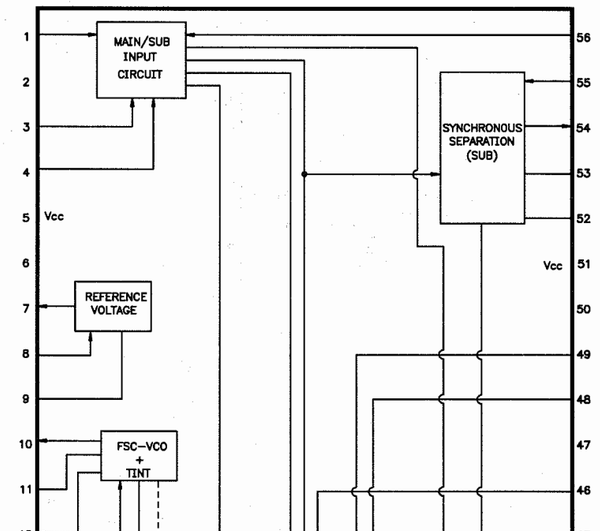

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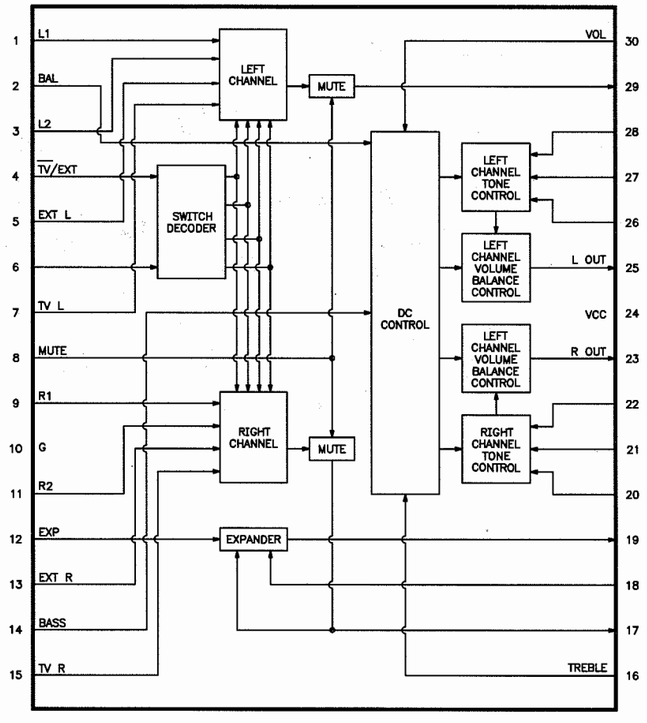
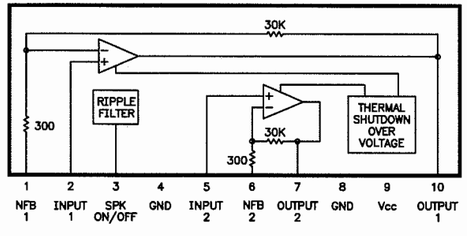
LA7953



IC3A2
LA4270



PARTS LIST

Important Parts Information

- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

Participating Vendors

Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams *Annual Index* for their current address.

- Custom Components Corporation (Chek-A-Color)
- NTE Electronics, Inc. (NTE)
- Philips ECG Company (ECG)
- PTS Electronics Corporation (PTS)
- Sencore, Inc.
- Thomson Consumer Electronics, Inc. (SK, TCE)

SEMICONDUCTORS

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D2A0	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D3A0	RBA-401	264P613010	-	-	-
D3F0, F1	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D5A1	EQA02-20B	-	NTE5029A	ECG5029A	SK20A
	RD22FB1	264P490040	-	-	-
D5A2, A3	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
# **D5A4**	RH2D	-	NTE588	ECG588	SK9938
	RH-2FS	264P157040	NTE558	ECG558	SK3998
# **D5A5**	RU3B	264P102020	NTE552	ECG552	SK3318A
D7A0, A1	EQA02-07A	-	NTE5014A	ECG5014A	SK6A8
	RD6.8FB2	264P485020	-	-	-
D7A2	HZ5BLL	264P502020	-	-	-
D7A3 Thru					
D7A9	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7B0, B1 (1)	RD6.2FB3	264P484080	-	-	-
D7B2 Thru					
D7B4	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7B5	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7B6	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7B7 (1)	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7B8	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7B9	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7C0	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7C1, C2 (1)	EQA02-06E	-	NTE5013A	ECG5013A	SK6A2
	RD6.2FB3	264P484080	-	-	-
D7P1	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D110	EQA02-05C	-	NTE5010A	ECG5010A	SK5A1
	RD5.1FB1	264P483070	NTE135A	ECG135A	SK5V1
D111	EQA02-30A	-	NTE5035A	ECG5035A	SK30A
	RD30FB3	264P491090	NTE5084A	ECG5084A	SK30V
D200, 01	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D203 Thru					
D206	1SS99	264P389010	NTE112	ECG112	SK3089
D250	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D260	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D451	ERA15-02	264P825010	NTE552	ECG552	SK9000
D452	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D500, 01	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D510	EQA02-33A	-	NTE5036A	ECG5036A	SK33A
	RD36EB1	264P471010	NTE5037A	ECG5037A	SK36A

 # For SAFETY use only equivalent replacement part.
(1) Used in some versions

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D530	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D540, 41	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D552	ES1F	264P295030	NTE558	ECG558	SK3998
# **D553**	RU3B	264P102020	NTE552	ECG552	SK3318A
D561	RU4AM	264P358070	NTE580	ECG580	SK5036
# **D582**	ERA15-02	264P825010	NTE552	ECG552	SK9000
D593	ERA15-02	264P825010	NTE552	ECG552	SK9000
D595, 99	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D701	HZ5ALL	264P502010	-	-	-
D702	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D703	EQA02-07A	-	NTE5014A	ECG5014A	SK6A8
	RD6.8FB2	264P485020	-	-	-
D704	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D705, 06	ERA15-02	264P825010	NTE552	ECG552	SK9000
D707, 08	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D761	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D771, 72	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D781 Thru					
D789	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D790	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D791	EQA02-08C	-	NTE5016A	ECG5016A	SK8A2
	RD6.2FB3	264P484080	-	-	-
D791A (1)	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D792, 99	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D801, 02	1S2076A	-	NTE519	ECG519	SK3100
	1S2471	264P045040	NTE519	ECG519	SK3100
D803, 04	S5500D	264P285010	NTE116	ECG116	SK3313
D850, 51	TVR1G	-	NTE552	ECG552	SK9000
	ES1C	264P295020	NTE552	ECG552	SK9000
D901	ERA15-02	264P825010	NTE552	ECG552	SK9000
# **D953**	RBV-406M	264P512040	NTE5330	ECG5330	SK9972
D2004	EQA02-07CD	-	NTE5014A	ECG5014A	SK6A8
	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
D2005, 06	EQA02-11A	-	NTE5020A	ECG5020A	SK11A
	RD11FB3	264P487050	-	-	-
IC3A0	UPC7812H	266P934020	NTE966	ECG966	SK3592
IC3A2	LA4270	272P140010	NTE1798	ECG1798	SK9745
IC200	LA7674	272P630020	-	-	-
IC350	UPC1871CU	272P351020	-	-	-
IC401	LA7837	272P239030	-	-	-
IC551	UPC7812H	266P934020	NTE966	ECG966	SK3592
IC552	L78M09	266P931010	NTE1902	ECG1902	SK3962
IC701	M37263MB-561SP	274P383010	-	-	-
IC702	CAT24C02P	263D002010	-	-	-
IC703	PST520E	266P130030	-	-	-
IC704	UPC7805H	266P934060	NTE960	ECG960	SK3591
# **IC951**	STR3230	267P911090	NTE1742	ECG1742	SK9995

 # For SAFETY use only equivalent replacement part.
(1) Used in some versions

Created with pride by the employees of Howard W. Sams & Company.

J. Barker, N. Beck, B. Bryant, B. Buchanan, T. Clensy, D. Cobb, G. Farrell, B. Fink, M. Herkless, J. Kocha, F. Malek, B. Medaris, R. Raus, B. Skinner, J. Young

PARTS LIST continued

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

	Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
	IC2001	LA7956	272P394010	-	-	-
	IC2002	LA7956	272P394010	-	-	-
	IC2003	LA7222	272P184010	NTE7066	ECG7066	-
	IC3001	LA7953	272P139010	-	-	-
	IC3002	UPD6326C	263P869010	-	-	-
	IC7000	HA11579	272P860030	-	-	-
	IC7100	HD49420FS	274P177030	-	-	-
	IC7101	HM53461ZP-12	263P548010	-	-	-
#	**PC5A1**	ON3131-R	268P058010	-	-	-
#	**PC5A2**	ON3131-R	268P058010	-	-	-
	Q3A0	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
	Q3A1	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q5A1	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
		2SC2603-F/E	-	NTE289A	ECG289A	SK9137
	Q5A2	2SC2603-G	260P338050	NTE289A	ECG289A	SK9137
	Q5A3	2SA1175-E/F	260P254010	NTE2362	ECG2362	SK3114A
#	Q5A4	2SC2168-Y/O	260P428020	NTE375	ECG375	SK3929
		2SC2073-B/C	-	NTE375	ECG375	SK3929
		2SD386A-D/E	-	NTE375	ECG375	SK9118
		2SD401A-K/L	-	NTE375	ECG375	SK3929
	Q100, 01	2SC1906	260P356010	NTE107	ECG107	SK3293
	Q102	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q103	2SA933S-S/R	260P560040	NTE290A	ECG290A	SK9132
		2SA1115-E/F	-	NTE290A	ECG290A	SK9138
	Q200	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
	Q206, 07	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q250	2SA950-Y	260P255040	NTE290A	ECG290A	SK3841
		2SA673D	-	NTE290A	ECG290A	SK9132
	Q251	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q252	2SK656	260P582010	-	-	-
	Q301	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q530	2SA1320	260P469020	NTE288*	ECG288*	SK3434*
#	**Q551**	2SD1879	260P608010	NTE2331	ECG2331	SK10088
	Q552	2SC2655-Y	260P325030	NTE293	ECG293	SK3849
	Q600	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
	Q651, 52, 53	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q654, 55, 56	2SC3789-E/D	260P571010	NTE157	ECG157	SK3747
	Q701 Thru					
	Q705	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
	Q761	2SA933S-S/R	260P560040	NTE290A	ECG290A	SK9132
		2SA1115-E/F	-	NTE290A	ECG290A	SK9138
	Q762	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q763 (1)	2SA933S-S/R	260P560040	NTE290A	ECG290A	SK9132
		2SA1115-E/F	-	NTE290A	ECG290A	SK9138
	Q771	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137
	Q772	2SA933S-S/R	260P560040	NTE290A	ECG290A	SK9132
		2SA1115-E/F	-	NTE290A	ECG290A	SK9138
	Q781, 82, 83	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
		2SC2603-E/F	-	NTE289A	ECG289A	SK9137

**For SAFETY use only equivalent replacement part.**
* Lead configuration may vary from original.
(1) Used in some versions

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
Q801	2SB940A-P	260P573020	NTE398	ECG398	SK9363
Q802	2SD1264A-P	260P574020	NTE375	ECG375	SK9118
Q803	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
	2SC2603-F/E	-	NTE289A	ECG289A	SK9137
Q804	2SA933S-S/R	260P560040	NTE290A	ECG290A	SK9132
	2SA1115-E/F	-	NTE290A	ECG290A	SK9138
Q805	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
	2SC2603-F/E	-	NTE289A	ECG289A	SK9137
Q806	2SC1740S-S/R	260P5559030	NTE85	ECG85	SK3122
	2SC2603-F/E	-	NTE289A	ECG289A	SK9137
Q807, 08	2SC1740S-E/S	260P559050	NTE85	ECG85	SK3122
	2SC2603-F/E	-	NTE289A	ECG289A	SK9137
Q809	2SC1740S-E/S	260P559050	NTE85	ECG85	SK3122
	2SC2603-F/E	-	NTE289A	ECG289A	SK9137
Q901	2SC1740S-E/R	260P559050	NTE85	ECG85	SK3122
	2SC2603-F/E	-	NTE289A	ECG289A	SK9137
Q2030, 51	2SA933S-S/R	260P560040	NTE290A	ECG290A	SK9132
	2SA1115-E/F	-	NTE290A	ECG290A	SK9138
Q2052, 53	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
	2SC2603-E/F	-	NTE289A	ECG289A	SK9137
Q2054	2SC1740S-S/R	260P559030	NTE85	ECG85	SK3122
	2SC2603-E/F	-	NTE289A	ECG289A	SK9137
Q2055	2SC2274-F	260P416030	NTE289A	ECG289A	SK3124A
Q2056	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
Q7001 Thru					
Q7006	2SA1037K-S	260P817030	NTE2409	ECG2409	SK10100
Q7007, 55	2SC2412KS	260P818030	NTE2408	ECG2408	SK10099
Q7057	2SC2412KS	260P818030	NTE2408	ECG2408	SK10099

**For SAFETY use only equivalent replacement part.**

COILS & TRANSFORMERS

	Item No.	Function/Rating	Mfr. Part No.	On-Unit No.
	BP2001	Chroma Bandpass	349P198010	-
#	**DY** (3)	Yoke 110°	-	YG-29GQAH
		Horiz .96mH		
		Vert 18mH		
#	**L5A1**	Horizontal Linearity	333P012070	012-7
#	**L5A2**	180µH	409P252020	-
	L100 (1)	.22µH	-	-
	L101 (1)	1.8µH	-	-
	L102	1.8µH	325C120040	-
	L104	VIF 45MHz	323P111020	-
	L105	15µH	325C161050	-
	L108	VIF 45.75MHz	323P171010	-
	L251	100µH	325C162050	-
	L300	SIF	327P073020	-
	L307	18µH	325C121060	-
	L450	1000µH	325C108070	-
#	**L554**	Ferrite Bead	411P001010	-
	L651 Thru			
	L653	68µH	325C202030	-
	L654 Thru			
	L656	68µH	325C207030	-
	L657	15µH	325C306050	-
	L701 (1)	10µH	-	-
	L801	Ferrite Bead	411D009020	-
	L802	18µH	325C106060	-
	L803	220µH	325C107090	-
	L892	100µH	325C307050	-
#	**L901**	Line Filter	351P090020	-
#	**L991**	Degaussing	409B108020	-
	L2051	15µH	325C121050	-
	L2052	56µH	325C122020	-
	L7000	10µH	321C031040	-
	L7001	100µH	325C107050	-
	L7002	10µH SMT	325C141030	-
	L7003	10µH SMT	325C141030	-
	L7004 (1)	10µH	-	-
	L7102	10µH SMT	325C141030	-
	L7103	10µH SMT	325C141030	-
	LC7101	Filter	409P771010	-
	LC7102	Clock	409P736010	-
#	**T5A1**	Side Pincushion	349P145050	349P14505
	T100	Trap	320P026030	-
#	**T551** (2)	Horizontal Output	334P212030	334P21203
#	**T552**	Horizontal Drive	336P012040	P01204
	T991	Power	350P439020	350P43902
	T2051	Matching (Delay Line)	409P750010	-

**For SAFETY use only equivalent replacement part.**
(1) Used in some versions.
(2) Focus and screen controls are part of T551.
(3) Part of CRT.

PARTS LIST continued

CONTROLS & RESISTORS

	Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
	R3A0	100 5% 3W	-	3W110
	R3F1	5600 1%	-	-
	R3F2	2000 1% 1/4W	-	-
	R5A5	5100 1%	-	-
#	**R5B3**	3300 5% 1/4W	-	QW233
		6800 5% 1/4W	103P713050	QW268
#	**R5B5**	6800 5% 1/4W	103P413050	QW268
#	**R5C5**	3300 5% 1/4W	103P413010	QW233
#	**R5C6**	3900 5% 1/2W	103P143020	HW239
#	**R5C7**	390 5% 2W	103C182000	2W139
		270 5% 2W	-	2W127
#	**R5D0** (1)	820 3W	-	-
#	**R5D1**	1 5% 2W	103C188000	2W1D0
	R129	130K 1% 1/4W	-	-
	R213	11K 1% 1/4W	-	-
		9100 1% 1/4W	-	-
	R358	56K 1% 1/4W	-	-
	R360	82K 1% 1/4W	-	-
	R380	56K 1% 1/4W	-	-
	R402	24K 1% 1/4W	-	-
	R403	1200 1% 1/4W	-	-
	R500	300 1% 1/4W	-	-
	R504	10K 1% 1/4W	-	-
	R510	3300 1% 1/4W	-	-
	R511	39K 1% 1/4W	-	-
#	**R520**	1300 1% 1/4W	103P462080	-
#	**R521**	10K 1% 1/4W	103P464090	-
	R522	82 5% 3W	-	3W082
	R550	100 5% 3W	-	3W110
#	**R555**	3.9 10% 10W Wirewound	109D075040	10W3D9
	R556	24K 1% 1/4W	-	-
	R557	27K 1% 1/4W	-	-
#	**R558**	.33 5% 1W	103C177040	1WD33
#	**R560**	1.2 5% 1/4W	103P338010	QW1D2
#	**R561**	.33 5% 1W	103C177040	1WD33
#	**R585**	1.2 5% 1/4W	103P338010	QW1D2
	R589	10K 5% 3W	-	3W310
	R607	7500 1%	-	-
	R653	8200 5% 3W	-	3W282
	R673	8200 5% 3W	-	3W282
	R676	8200 5% 3W	-	3W282
#	**R682**	.82 5% 2W Fusible	103P437090	-
	R712	10K 1% 1/4W	-	-
	R713	13K 1% 1/4W	-	-
	R740	8200 1% 1/4W	-	-
	R741	47K 1% 1/4W	-	-
	R742	8200 1% 1/4W	-	-
	R743	20K 1% 1/4W	-	-
	R744	24K 1% 1/4W	-	-
	R745	91K 1% 1/4W	-	-
	R746	10K 1% 1/4W	-	-
	R801	330 5% 3W	-	3W133
#	**R910**	4.7M 10% 1/2W	109D036020	HW547
#	**R954**	100 10% 30W Wirewound	109D105020	-
#	**R956**	820K 10% 1/2W	101P824030	HW482
#	**R957**	2.2 10% 15W	109D044080	-
#	**R960**	470K 5% 1/4W	103P415070	QW447
#	**R961**	12K 5% 1W	103C173080	1W312
#	**R962**	470 5% 1/4W	103P412010	QW147
	R2056	200 1%	-	-

 # For SAFETY use only equivalent replacement part.
(1) Used in some versions.

CONTROLS & RESISTORS continued

	Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
	R3032	10K 5% X 6 Network	103P563070	-
	R7008	3000 1% 1/10W SMT	103P473060	-
	R7017	1800 1% 1/10W SMT	103P473010	-
#	**RP901**	5.4 PTC / 174 NTC Cold	265P071040	-
#	**RV901**	Varistor (ERZ-C10DK271)	265P084020	-
	VR5A1	500 PCC Phase	127C080030	-
	VR5A2	5000 PCC Amp	127C080070	-
	VR5A3	30K Horizontal Width	127C091000	-
	VR5A4	20K Bias	127C080090	-
	VR100	10K RF AGC	127C080080	-
	VR101	1000 Video Input	127C080040	-
	VR200	100K Sub Contrast	127C081020	-
	VR2051	3000 Comb Filter	127C090060	-
	VR320	5000 Composite	127C080070	-
	VR351	20K Filter	127C180090	-
	VR353	5000 Separation	127C180070	-
	VR354	5000 Spectrum	127C180070	-
	VR355	50K Stereo VCO	127C191010	-
	VR401	50K Vertical Size	127C091010	-
	VR402	10K Vertical Linearity	127C080080	-
	VR651	200 Red Drive	127C020010	-
	VR652	200 Blue Drive	127C020010	-
	VR653	10K Red Cutoff	127C020080	-
	VR654	10K Green Cutoff	127C020080	-
	VR655	10K Blue Cutoff	127C020080	-
	VR7001	500 Luminance	127C090030	-
	VR7002	500 Chroma	127C090030	-

 # For SAFETY use only equivalent replacement part.

CABINET PARTS

Item	Part No.
Model CS-27201	
# Cabinet Back	700C175010
Cabinet Front Assembly	701D100060
Speaker Grille	702A324010
Model CS-27303	
# Cabinet Back	700C176030
Cabinet Front Assembly	701D100060
Speaker Grille	702A324010

 # For SAFETY use only equivalent replacement part.

CAPACITORS & ELECTROLYTICS

	Item No.	Rating	Mfr. Part No.
#	**C5A4**	2.2µF 20% 50V	181P355020
	C5A5	4.7µF 20% 25V NP	-
#	**C5A8**	2.2µF 10% 100V	189D062030
#	**C5A9**	.1 5% 400V	172P083000
#	**C5B1**	.33 5% 200V	189P071050
#	**C5B2**	220pF 10% 2kV	154P231060
#	**C5B3**	220pF 10% 2kV	154P231060
#	**C5B4**	.047 5% 400V	172P152070
#	**C5B5**	.015 5% 1.6kV	172P171050
#	**C5B6**	.015 5% 800V	189P063090
#	**C5B7**	.12 5% 200V	189P071040
	C7P1 (1)	47µF 16V NP	-
	C111	100pF 10% 50V NPO	-
	C112	82pF 10% 50V N075	-
	C307	47pF 10% 50V NPO	-
	C309	47pF 10% 50V NPO	-
	C352	10µF 20% 50V NP	-
	C366	10µF 20% 50V NP	-
	C367	10µF 20% 50V NP	-
#	**C510**	100µF 10V	-
	C540	33µF 20% 16V NP	-
#	**C552**	.0018 5% 1.6kV	172P170040
	C559	1µF 20% 50V NP	-
#	**C563**	10µF 20% 250V	181P194000
#	**C565**	1000µF 20% 35V	181P186050
#	**C570**	.0012 10% 2kV	154P251090
#	**C583**	10µF 20% 100V	181P187040
	C595	47µF 20% 20V NP	-
	C657	.001 10% 2kV	-
	C658	.001 10% 2kV	-
	C774	10µF 20% 25V NP	-
	C816	10µF 20% 25V NP	-
#	C901	.1 20% 125VAC	189P033050
#	C910	.022 20% 250VAC	189P133020
		.01 20% 250VAC	-
#	C911	.01 20% 250VAC	189P133010
#	C953	820µF 20% 180V	185D063030
#	C954	.0022 500V	142P014000
#	C955	.0022 250VAC	189P060060
#	C956	.0022 250VAC	189P060060
#	C957	47µF 20% 200V	181P189080
#	C960	10µF 20% 160V	181P188060
	C2007	3.3µF 20% 50V NP	-
	C2023	3.3µF 20% 50V NP	-
	C2030	10µF 20% 100V	-

 # For SAFETY use only equivalent replacement part.
(1) Used in some versions.

MISCELLANEOUS

	Item No.	Description	Mfr. Part No.	Notes
	CF100	Trap	296P024020	4.5MHz
	CF300	Filter	296P067010	4.5MHz
	CF500	Resonator	299P154010	503kHz
	DL205	Delay Line	337P190010	-
	DL2032	Delay Line	337P189010	-
	DL2051	Delay Line	337P188010	-
#	**F901**	Fuse	283D060030	6.3Amp
#	**F951**	Fuse	283D076040	2Amp, Fast Acting
#	**K901**	Relay	287P049030	Power
	LF7001	Filter	409P402030	EMI
	LF7002	Filter SMT	409P777020	EMI
	LF7003	Filter	409P402020	EMI
#	**P900**	Line Cord	242C499040	AC, Polarized
	S781	Switch	432P066070	Power
	S782	Switch	432P066070	AV Reset
	S783	Switch	432P066070	Volume Up
	S784	Switch	432P066070	Volume Down
	S785	Switch	432P066070	Scan Up
	S786	Switch	432P066070	Scan Down
	S787	Switch	432P066070	Input
	SF101	Filter	296P096030	SAW
	SP391	Speaker	480P013020	3", 8 Ohms, 3W
	SP392	Speaker	480P013020	3", 8 Ohms, 3W
#	**V651**	CRT	255P935020	M68JUA068X01
	X600	Crystal	285P029050	3.58MHz
	X701	Crystal	285P039020	8MHz
	X702	Crystal	285P139030	12MHz
	X7001	Crystal	285P066010	3.58MHz
	Z701	Receiver	939P296090	Remote
		PC Board (1)	920D502010	Comb Filter
		PC Board (1)	930C473007	CRT
		PC Board (1)(2)	930C473006	CRT
		PC Board (1)	920A408007	Main
		PC Board (1)(2)	920A408006	Main
		PC Board (1)	920D501010	MCS
		PC Board (1)	930C322080	PCC
		PC Board (1)	930B552012	PIP
		Socket	449C081020	CRT
		Transmitter	290P005040	Remote
		Transmitter (2)	290P005060	Remote
		Tuner (1)	295P269030	UHF/VHF, ENV-568F9G3

 # For SAFETY use only equivalent replacement part.
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.
(2) Used in model CS-27201.